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APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000930510(

LOMIZE, B. M.

32482. Nekotoryye voprosy proyektirovaniya besplotinnykh vodozaborov samotechnogo tipa. Izvestiya Gruz. nauch.-issled. in-ta gidrotekhniki i melioratsii, t. I, 1949, s. 139-48.--Rezyume na gruz. yaz.

SO: Letopis' Zhurnal'nykh Statey, Vol. 50, Moskva, 1949

LOMIZE, B.M., inzhener.

Locating the dangerous sliding area in calculating the stability of embankments. Gidr.stroi. 23 no.2:32-36 '54. (MIRA 7:4)
(Embankments)

LOMIZE, G.M., doktor tekhn.nauk, prof.; ZIANGIROV, R.S., kand.tekhn.nauk

Using electroacoustic piezodynamometers in the construction of the Plavinas Hydroelectric Power Station. Gidr.stroi. 32 no.4:33-35 Ap '62. (MIRA 15:4)
(Plavinas Hydroelectric Power Station) (Dynamometer)

LOMIZE, G.M.

Percolation through grainy grounds [with summary in English]. Izv. AN Arm.SSR.Est.nauki no.1:65-96 '46. (MLRA 9:8)

1. Institut geologicheskiky nauk Akademii nauk Armyanskoy SSR.
(Water, Underground) (Soil percolation)

LOMIZE, G. M.

32483. Treshchinovataya gornaya poroda, kak sreda, soderzhashcha-ya fil'tratsionnyy potok. Izvestiya Gruz. nauch.-issled. in-ta gidrotekhniki i meloratsii, t. I, 1949, s. 5-12--Rezyume na gruz. yaz.--Bibliogr: 25 nazv.

SO: Letopis' Zhurnal'n... [illegible] 50, ...oskv... [illegible]

LOMIZE, G. M.

Filtration in fissured [illegible] ...s. ...oskva, [illegible] 12? p. (51 34485)

TC171.L6

LOMIZE, PROF G. M.

191T57

USSR/Hydrology - Irrigation Sep 51

"Counter Filtration Measures in Canals and Reservoirs," Prof G. M. Lomize, Prof A. S. Voznesenskiy, S. G. Khlebnikov, Cand Tech Sci

"Gidrotekh i Meliorat" Vol III, No 9, pp 7-18

Filtration losses should be kept at min to raise the efficiency of irrigational systems. Results of investigations by Georgian Sci Res Inst of Hydraulic Eng and Soil Improvement were discussed in a session of Sci Tech Council and Tech Bur. Artificial binding of soils was adopted. Mech reinforcement, widely applied in road construction, was recommended also against filtration.

191T57

FD-2920

USSR/Engineering - Civil - Water Filtratior

Card 1/1 Pub. 41-1/17

Author : Lomize, G. M. and Nasberg, V. M., Moscow, Tbilisi

Title : Drainage of pressureless hydraulic tunnels

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 6, 3-15, June 1955

Abstract : Points out the need for having a full understanding of the principles of hydraulic pressure which is developed on the outer walls of a tunnel, or a main by seepage of subterranean water. Describes the most effective ways to drain off this water, and thus reduce the pressure on the tunnel walls. Drawings, tables, graphs, formulae, Six references, all USSR.

Institution :

Submitted : April 5, 1955

SOV/112-57-9-18476

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 9, p 55 (USSR)

AUTHOR: Lomize, G. M.

TITLE: Uplift of Gravity Concrete Dams (Vzveshivaniye gravitatsionnykh betonnykh plotin)

PERIODICAL: Tr. Mosk. energ. in-ta, 1956, Nr 19, pp 204-216

ABSTRACT: In considering the uplift force and hydrodynamic pressure exerted by a seeping liquid on the skeleton of a percolating medium (concrete, soil), the following assumptions have been made: (1) concrete is considered as a permeable body; (2) concrete comprises a communicating system of pores; (3) water in concrete pores transmits the hydrostatic pressure that consequently results in an uplift of the skeleton. If a concrete body is dissected by a surface normal to the seepage path and crossing the minimum quantity of monolithic bridges, the total area of bridges is characterized by an effective-porosity factor n_w = $(F-F_1)/F$, where F is the total area of cross-section, F_1 is the monolithic-bridges area. Experiments show that F_1 does not exceed 7-9%, whence n_w

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SOV/112-57-9-18476

Uplift of Gravity Concrete Dams

should be 0.9 or higher; (4) the hydrodynamic pressure of the seepage stream exerted on the solid concrete phase is equal to $D = -n_w \cdot \Delta_{VW} \cdot$ grad h, where Δ_g is volumetric weight of water, h is the seepage head. As n_w is close to 1, the above formula for concrete does not differ much from an expression for hydrodynamic pressure on the skeleton exerted by a disperse soil: $D = -\Delta_g \cdot$ grad h; (5) loosely bonded water transmits a hydrostatic pressure; (6) the effective-porosity factor can be similarly applied to fissured and porous solid rocks, also subject to uplift; (7) for gravelly and sandy soils (except for cemented) $n_w = 1$; i.e., these soils do not differ much from concrete as far as uplift and hydrodynamic pressure are concerned; (8) the effect of uplift and hydrodynamic pressures in clayey soils is not clear, but it can be assumed that n_w is close to unity for these soils, too. The effect of water on a structural massif can be determined from the aforesaid. Quantitatively the concrete uplift in water can be calculated from a simplified formula $\Delta_{uplift} = \Delta_b - 1$. If water levels are different on both sides of a concrete massif, a seepage

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SOV/112-57-9-18476

Uplift of Gravity Concrete Dams

stream (apart from the uplifting pressure) appears and causes a hydrodynamic pressure within the massif. Porosity and seepage peculiarities of concrete influence qualitatively the evaluation of the role of counter-seepage measures. Discrepancies noted between the recommended calculated structure stability and the operating experience data require that latent additional safety factors of the structure be evaluated. It is necessary to develop new standards for designing concrete gravity dams on the basis of their limit stability.

V.G.P.

Card 3/3

SOV/124-58-1-903

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 120 (USSR)

AUTHORS: Lomize, G.M., Nasberg, V.M

TITLE: Consideration of the Permeability of the Concrete in Seepage Calculations for a Tunnel (Uchet vodopronitsayemosti betona v fil'tratsionnykh raschetakh tunnelya)

PERIODICAL: Tr. Mosk. energ. in-ta, 1956, Nr 19, pp 216-240

ABSTRACT: The authors present a method for the approximate seepage calculation of drained and nondrained atmospheric hydraulic tunnels with consideration of the permeability of the tunnel lining under the following premises: The seepage flow is plane and steady; the relative depth of the tunnel with respect to the free ground-water level exceeds the perimeter of the cross section of the tunnel so much that the surface of seepage may be considered to be approximately coincident with a horizontal surface; the soil and the concrete of the lining are assumed to be uniform and isotropic relative to permeability, and the seepage of the water follows the Darcy law. In finding the calculational relationships for the case when the tunnel is drained at the bottom, the authors use a superposition in

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SOV/124-58-1-903

Consideration of the Permeability of the Concrete (cont.)

a plane of the flows that are the result of the presence of point sources and sinks, under the condition that the upper and the lower half-planes have different permeability coefficients. An analysis of numerical calculations adduced in the paper enables the authors to arrive at the following conclusions: If the ratio of the permeability coefficient of the concrete of the tunnel lining divided by the permeability coefficient of the soil exceeds 0.1, then draining the tunnel is not practicable; if that ratio is less than 0.05, then the tunnel can be drained effectively, in which case the permeability of the lining may be safely disregarded in seepage calculations. Bibliography: 7 references.

S. N. Numerov

Card 2/2

LOMIZE, G.M., dokter tekhnicheskikh nauk, professor; NETUSHIL, A.V., dokter tekhnicheskikh nauk, professor.

Using electroosmosis in lowering ground water level. Gidr.stroi.25 no.3:26-31 Ap '56. (MLRA 9:9)
(Electroosmosis) (Water, Underground)

LOMIZE, G. M., NETUSHIL, A. V., Profs., Moscow Power Institute, Moscow, and RZHANITZIN, B. A., Prof., All-Union Research Institute for Foundations, Moscow

"Electro-osmotic Processes in Clayey Soils and Dewatering During Excavations," a paper submitted at the 4th International Conference of the International Society of Soil Mechanics and Foundation Engineering, London, 12-24 Aug. 57.

LOMIZE G.M.

LOMIZE, G.M., doktor tekhn.nauk, prof.; GRIGORYAN, A.A., inzh.

Deformations in loess soils. Gidr.stroi. 26 no.9:27-33 S '57.
(MIRA 10:10)

(Soil mechanics)

PHASE I BOOK EXPLOITATION SOV/5203

Lomize, Grigoriy Mikhaylovich, and Anatoliy Vladimirovich Netushil

Elektroosmoticheskoye vodoponizheniye (Electro-Osmotic Depression of Water Level [Dewatering]) Moscow, Gosenergoizdat, 1958. 175 p. 2,700 copies printed.

Ed.: G. M. Mariupol'skiy; Tech. Ed.: A. M. Fridkin.

PURPOSE: This book is intended for technical personnel in planning, construction, and scientific research organizations.

COVERAGE: The authors describe the results of theoretical and experimental investigations of electro-osmosis phenomena in the soil and of electro-osmotic depression of the water level and its practical application in the USSR and abroad. According to the Foreword, this is the first attempt to present a generalization of the experience gained in this field and to develop practical methods of designing the assemblies in question. Chs. I and II and Pars. 1 and 2 of Ch. IV were developed and written by

Card ~~1/6~~

Electro-Osmotic Depression (Cont.) SOV/5203

G. M. Lomize, Professor, and Ch. III and Pars. 3, 4, and 5 of Ch. IV by A. V. Netushil, Professor. Ch. II is based on the research work carried out by the Department of Foundations, Earthworks, and Constructions of the Moskovskiy energeticheskiy institut (MEI) (Moscow Power Engineering Institute) under the supervision and with the participation of G. M. Lomize. The following investigations are of special interest: on electrostabilization of the soil, by Ye. P. Kudryavtsev, Engineer; on the electro-osmotic factor, by R. S. Ziangirov, Engineer; and on the effect of direct current on the filtration properties of clay soils, by A. A. Mukhin, Candidate of Technical Sciences, and R. S. Ziangirov. Ch. III contains the results of theoretical and experimental investigations made at the Department of Theoretical Principles of Electrical Engineering of the MEI under the supervision and with the participation of K. M. Polivanov, Professor, and A. V. Netushil. K. A. Krug, Professor, Corresponding Member, AS USSR, helped supervise the work, much of which was carried out by N. M. Burdak and A. A. Mukhin, Candidates of Technical Sciences. Ch. IV contains a generalization of practical work in the application of

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electro-osmotic dewatering in field operations. A. A. Mukhin, N. M. Burdak, Ye. P. Kudryavtsev, R. S. Ziangirov, S. N. Andreyev, I. A. Shekhtman, I. Logov, S. A. Levitan, and others took part in this phase of the work. The MEI investigations of the effect of direct current on the soil and on the water in it have been continued beyond the publication date, and, according to the Foreword, brought to light new data on the electrical stabilization of the soil, the effect of direct current on filtration and other soil properties, and the possibility of using the direct current effect on the statics of ground masses. Rather than delay publication of the first reports on this subject, the authors decided to include the developments, corrections, and new information on electro-osmosis and its applications in the next issue of MEI proceedings. The authors thank G. M. Mariupol'skiy, Candidate of Technical Sciences, for his assistance. There are 62 references: 53 Soviet, 4 English, 3 German, 1 Italian, and 1 Polish.

TABLE OF CONTENTS:

LOMIZE, G.M.

98-58-6-2/21

AUTHOR: Lomize, G.M., Doctor of Technical Sciences, Professor

TITLE: Field of Possible Application and Schemes of Electro-Osmotic Lowering of Water Level (Oblast' vozmozhnogo primeneniya i skhemy elektro-osmoticheskogo vodoponizheniya)

PERIODICAL: Gidrotekhnicheskoye Stroitel'stvo, 1958, Nr 6, pp 7-12 (USSR)

ABSTRACT: The electro-osmotic process can be successfully used to lower the level of ground water in trenches and foundation pits in clay and clay-sandy water-saturated soils of low density. The author describes in detail the scheme in which ordinary draining wells are used as cathodes, and iron rods of different form driven into the soil are used as anodes (Figure 1). This scheme was elaborated by the Nauchno-issledovatel'skiy institut osnovaniy i podzemnykh sooruzheniy - Scientific Research Institute of Foundations and Underground Constructions - (B.S. Fedorov, B.A. Rzhanitsyn). The work was done under the supervision of the Doctor of Technical Sciences, Professor A.V. Netushil.
There are 5 figures and 10 references, 8 of which are Soviet and 2 English.

AVAILABLE: Library of Congress

Card 1/1

1. Ground water-USSR 2. Hydrology-USSR 3. Anodes-Applications 4. Cathodes-Applications

SOV/24-58-7-9/36

AUTHOR: Lomize, G. M. (Moscow)

TITLE: The Effect of the Ground Structure on Its Electro-Osmosis (O vliyanii struktury grunta na elektroosmos v nem)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 7, pp 61-69 (USSR)

ABSTRACT: The electro-osmosis of the ground is considered by the author in relation to the stream of water having laminar properties. The following factors affect the motion of water (electrolyte): 1)a) - soil porosity, m ; b) - the surface of the unit volume of soil skeleton, S , (I^{-1}); c) - the characteristic distance L between the saturated particles with hydraulic radius R = m/S (Eq 1); d) - the shape of the skeleton particles, Φ . 2)a) - density of water ρ (M, L^{-3}) ; b) - coefficient of viscosity μ(M, L^{-1}, T^{-1}); c) - coefficient of kinematic viscosity $\nu = \mu/\rho$, (L^2, T^{-1}). 3) Velocity of the interstitial water U_c (Eq 2, where V_s - fictitious rate of the electro-osmosis). 4) Electric power equal to the resistance V_s (Eq 3, where σ_c - volume density of the charge, i.e. sum of ions, σ_s - as σ_o but related to

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The Effect of the Ground Structure on Its Electro-Osmosis

the unit surface of the soil skeleton). The electro-osmosis is described by the 7 functions of the expression (4), from which the two non-dimensional values (Eq 5) are defined (f_e - coefficient of resistance, N_{Re}^e - Reynold's number). When substituting Eq (5) into Eq (4) the formula (6) is obtained, which can be determined experimentally. Also it was found experimentally that the relation between f_e and N_{Re}^e could be expressed as Eq (7), where A - a constant parameter. When Eq (5) is substituted into Eq (7), the formula (8) is obtained, while from Eqs (2) and (3) the formula (9) is derived (K_e - coefficient of electro-osmosis = fictitious rate of electro-osmosis V_e at the tension of the external electric field 1 v/cm). Thus, the formula (9) describes the specific property of the electro-osmosis and K represents the preparation of the soil, all the particles of which are affected by the

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SOV/24-58-7-9/36

The Effect of the Ground Structure on Its Electro-Osmosis

electro-osmositic water flow. In the case of larger soil particles (sand) the increased dimension of the pores causes changes in the water motion and the formula (9) must be adjusted accordingly. The curves of the electro-osmosis rate are shown in Fig 1 (a - fine, b - coarse, v - intermediate size of pores, g - linear rate. The relation of the surface of the soil skeleton and the hydraulic radius to the size of the particles and porosity is given by Eq (11), which, when substituted into Eqs (9) and (10) gives formula (12) (fine particles, and (13) (coarse particles). The experimental verification of the above calculation was made by R. S. Ziangirov by means of a coaxial electro-osmosis meter, illustrated in Figs 2 and 3 (1 - water supply, 2 - level control, 3 - cathode Fe , 4 - anode Fe , 5 - water outlet). The samples of soil were submitted for the tests in order to determine a relationship of the electro-osmosis and the porosity and the size of the particles. The samples are described in the Table on p 64, which gives the actual diameter (2nd column) and the mean diameter (3rd column) and the 6 samples of soil (1st column). The description of the samples is given in the 4th column (fluvioglacial sand, screened; river sand,

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The Effect of the Ground Structure on the Electro-Osmosis

screened, coastal sand, screened; Marshallit, washed) and the mineral content in the 5th column (rolled grains of quartz mixed with the spar and flint; slightly rolled grains of quartz, mixed with dark coloured minerals; sharp splinters of quartz). The results of the experiments are shown in Fig 4, which represents the relationship of the electro-osmosis coefficient K (cm^2/v sec) and the size of grains (mm) for various porosities n (points 1-4 represent n = 48.., 45.0, 37.5 and 34.0 respectively, 5 - theoretical curve). The calculation of the electro-osmosis can be performed in respect to the zeta-potential (ζ) as applied in chemistry (Eq (14)).

Then the electro-osmosis will be defined as a relation of its rate to the density of the current (Eq 15). The output through a cross-section of the ground can be expressed by Eq (16) (i - current, γ - electroconductivity of the soil). The rate of the electro-osmosis (Eq 17) was calculated by I. I. Zhukov (Ref 1). The output was defined by him as Eqs (18) and

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The Effect of the Ground Structure on Its Electro-Osmosis

(19). In order to include the structure of the ground in these equations the formula (20) could be applied. The coefficient of filtration K_{φ} can be defined as Eq (21) or (22) and the relation $K = K_{\vartheta}/K_{\varphi}$ can be found from Eq (23). The results of the experimental determination of K in relation to the diameter (d) and porosity (m) of the homogeneous soil are given in Fig 5. There are 5 figures, 1 table and 9 references, of which 8 are Soviet and 1 English.

SUBMITTED: June 24, 1957.

Card 5/5

LOMIZE, G.M., prof., doktor tekhn.nauk; NASBERG, V.M., kand.tekhn.nauk

Seepage calculations for hydraulic tunnels. Izv.VNIIG 58:
162-176 '58. (MIRA 13:7)
(Soil percolation) (Tunnels)

LOMIZE, G.M.

Consolidating excavations by means of direct currents having an influence on static properties of clayey soils. Nauch.dokl. vys.shkoly; stroi. no.1:119-126 '59. (MIRA 12:10)

1. Rekomendovana kafedroy osnovaniy fundamentov i konstruktsiy Moskovskogo energeticheskogo instituta.
(Soil stabilization)

LOMIZE, G.M.

Regularities of deformability of dispersed soils. Nauch.dokl. vys.shkoly; stroi. no.2:121-128 '59. (MIRA 13:4)

1. Rekomendovana kafedroy osnovaniy, fundamentov i konstruktsiy Moskovskogo energeticheskogo instituta.
(Soil mechanics) (Plasticity)

LOMIZE, G.M., doktor tekhn.nauk, prof.

Calculating sag deformations of loess soils. Gidr. stroi. 31 no.7: 39-41 Jl '61. (MIRA 14:7)

(Loess)

LOMIZE, G.M., doktor tekhn.nauk, prof.; GIL'MAN, Ya.D., inzh.

Electric spark method of compacting soil. Gidr. stroi. 32 no.6:42 Je '62. (MIRA 15:6)
(Soil stabilization)

LOMIZE, G.M.; GUTKIN, A.M.; ZHUKOV, N.V.

Measurement of the conditionally instantaneous modulus of elasticity in tenacious soils. Inzh.-fiz. zhur. 5 no.6:61-66 Je '62. (MIRA 15:12)

1. Energeticheskiy institut, Moskva.
(Elasticity)
(Soil research)

LOMIZE, G.M.; GUTKIN, A.M.; ZHUKOV, N.V.

Study of the rheological properties of plastic clays. Osn., fund i mekh grun. 5 no.2:1-4 '63. (MIRA 16:3)

(Clay--Testing)

LOMIZE, G.M., prof., doktor tekhn. nauk; GIL'MAN, Ya.D., inzh.

Compacting soils by electric discharges. Trudy Giprovodkhoza no.22:155-162 '63. (MIRA 17:8)

LOMIZE, L.G.

SUHL, H.; WALKER, L.R.; LOMIZE, L.G., [translator]; MONOSOV, Ya.A. [translator]; KOSTYLEVA, V.Ye., [translator]; MIRIMANOV, G., redaktor; MOGILEVSKIY, Yu.A., redaktor; IOVLEVA, N.A., tekhnicheskiy redaktor

[Topics in guided wave propagation through gyromagnetic media. Translated from the English] Voprosy volnovodnogo rasprostraneniia elektromagnitnykh voln v girotropnykh sredakh. Perevod s angliiskogo L.G.Lomize, IA.A.Monosova i V.E.Kostylevoi. Moskva, Izd-vo inostrannoi lit-ry, 1955. 189 p. (MIRA 9:3)
(Radio waves) (Wave guides) (Electromagnetism)

Lomize, L.G.

FOKS, A.D.; MILLER, S.Ye.; VEIS, M.T.; LOMIZE, L.G. [translator]; MIRIMANOV, Ruben Gayevich, redaktor; KRYUKOV, I.A., redaktor; KORUZEV, N.N., tekhnicheskiy redaktor

[Behavior and application of ferrites in the microwave region. Translated from the English] Svoistva ferritov i ikh primenenie v diapazone SVCH. Perevod s angliiskogo L.G.Lomize. Moskva, Izd-vo "Sovetskoe radio," 1956. 99 p. (MIRA 9:3)
(Ferromagnetism)

LOMIZE, L.G.

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621.318.134:(537.226+538.22).029.6 1522

3, 4E4c

Ferrites with Low Losses at U.H.F.—K. G. Himmanov, L. G. Lomize & N. V. Pyrenshina. (*Radiotekhnika i Elektronika*, May 1956, Vol. 1, No. 5, pp. 681–682.) A brief note on ferrites containing some, or all, of the following: Fe_2O_3, MgO, Mn_2O_3 and calcium titanate. The loss angent, tan δ, is about 10^{-4} in the 3-cm-λ band, μ varies between about 0·4 and 0·9 for the different ferrites and ε between 6·9 and 18.

LOMIZE, L. G.

621.372 2977

Gyrotropic Infinitely Long Cylindrical Waveguide.—R. G. Mirimanov & L. G. Lomize. (*Radiotekhnika i Elektronika*, Sept. 1956, Vol. 1, No. 9, pp. 1195–1221.) Review of theory of e.m. wave propagation in cylindrical waveguides, completely filled with ferrite, in the presence of longitudinal and transverse magnetizing fields. 19 references, including six to Russian literature.

1-4E4c

Elec

Lomize, L.G.

109-10-11/19

AUTHOR: Lomize, L.G.

TITLE: Anomalous Rotation of the Polarisation Plane Caused by the Volume Resonance in a Gyro-magnetic Wavegu.de of Finite Length. (Anomal'noye vrashcheniye ploskosti polyarizatsii, obuslovlennoye ob'emnym rezonansom v giromagnitnom volnovode konechnoy dliny)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, No.10, pp. 1297 - 1299 (USSR).

ABSTRACT: Some experiments were carried out on a cylindrical waveguide which was completely filled with a ferrite material. It was found that as a result of strong reflections from the surfaces of the ferrite, a volume resonance was taking place which led to the appearance of a non-linear effect. The non-linearity consists of an anomalous rotation of the polarisation plane, as can be seen from two experimental curves (taken for two different samples) shown in Fig.1. The curves show the rotation of the polarisation plane as a function of the magnetising field applied to the ferrites. The above effect could be explained theoretically and calculations were made for a waveguide having a length of 1.19 cm, radius of 1 cm and operating frequency of 9 120 Mc/s; the ferrite was assumed to have a permittivity of 10. The calculated curves which are shown in Fig.2 are in good agreement with the experimental data.

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109-10-11/19

Anomalous Rotation of the Polarisation Plane Caused by the Volume Resonance in a Gyro-magnetic Waveguide of Finite Length.

There are 2 figures and 3 Slavic references.

SUBMITTED: February 27, 1957.

AVAILABLE: Library of Congress.

Card 2/2

LOMIZE, L.G.

109-1-17/12

AUTHORS: Mirimanov, R.G., Lomize, L.G.

TITLE: Some Titanate Ferrites at Ultrahigh Frequencies (Nekotoryye titanatovyye ferrity na sverkhvysokykh chastotakh)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, Nr 1, p.155 (USSR)

ABSTRACT: Some work was done towards increasing the permittivity of Mg-Mn ferrites by adding to them a quantity of $CaTiO_3$ which has $\varepsilon = 140$ and $tg\delta = 5 \times 10^{-3}$ at a wavelength of 3.2 cm. Curves of μ and $\varepsilon\mu$ as a function of titanate contents are shown in Fig.1. Fig.2 represents the Faraday effect in a cylindrical waveguide for the ferrites with various titanate contents. The paper contains 2 figures and 2 Russian references.

SUBMITTED: April 11, 1957

AVAILABLE: Library of Congress

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SOV/109-3-7-5/23

AUTHOR: Lomize, L. G.

TITLE: A Gyrotropic Cylindrical Waveguide of Finite Length (Girotropnyy tsilindricheskiy volnovod konechnoy dliny)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Nr 7, pp 896-907 (USSR)

ABSTRACT: A cylindrical waveguide containing a section filled with a ferrite material is considered (see Fig.1). The ferrite is assumed to be magnetized in the longitudinal direction. It is assumed that the waveguides on both sides of the ferrite are semi-infinite and have the same diameter as the ferrite section. A linearly polarised H_{11}-wave propagates along the axis z towards the ferrite section. The problem consists of determining the shift, ϕ, of the plane of polarisation and the ellipticity, [illegible], of the H_{11}-wave (see Fig.1) which propagates in the left-hand semi-infinite waveguide. It is necessary to relate ϕ and $tg\theta$ to frequency f, the length of the gyrotropic section l,

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A Gyrotropic Cylindrical Waveguide of Finite Length

radius of the waveguide R, the permittivity of the ferrite ε and the components of the ferrite tensor μ_1, μ_2 and μ_3. For the purpose of analysis it is assumed that the losses in the ferrite can be neglected. The solution of the Maxwell equations for the gyrotropic section can be expressed (Ref.4) by Eqs.(1), where J_n is a cylindrical function of the first kind of the n^{th} order, r is an arbitrary radius, φ is the azimuth, while the other parameters are defined by the equations on p 897. The arbitrary constant M of expressions (1) can be determined from the boundary conditions at the walls of the waveguide while the constant $A_{n\nu}$ can be evaluated from the boundary conditions at the facial planes of the gyrotropic waveguide. The propagation constant γ is given by Eqs.(2). If the electrical radius of the gyrotropic section is large (about 4 times greater than that of the isotropic waveguide), the propagation constants of various waves in the ferrite can be expressed by Eq.(3). The shift in the plane of polarisation and the ellipticity at the output of the gyrotropic waveguide are given by Eqs.(6) where the parameters u and

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v are determined by the remaining equations on p 901. Eqs.(6) are employed to plot ϕ and tgΘ as a function of l for various values of μ_2 ; the resulting curves are shown in Figs.3 and 4. ϕ as a function of μ_2 for various values of μ_1 is plotted in Figs.5 while tgΘ as a function of μ_2 for various values of μ_1 is shown in Figs.6. The families of curves of Figs.5 can be used as nomograms for an approximate determination of the tensor components of magnetized ferrites. The basic quantities in this case would be the polarisation planes ϕ_1 and ϕ_2 for two ferrite samples having different electrical thicknesses; the experimentally determined ϕ_1 and ϕ_2 can be used in conjunction with the curves of Fig.5 to determine curves of ϕ_1 = const and ϕ_2 = const in μ_1 and μ_2 coordinates. The point of intersection of these curves corresponds to the unknown values

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of μ_1 and μ_2 . This method was employed to determine μ_1 and μ_2 for a magnesium-manganese ferrite at a wavelength of 3.2 cm. The dependence of μ_1 and μ_2 on the magnetizing field H is shown in Fig.7. The paper contains 8 figures and 8 Soviet references.

SUBMITTED: February 27, 1957.

1. Waveguides--Physical properties 2. Ferrites--Magnetic properties 3. Electromagnetic waves--Propagation 4. Mathematics

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LOMIZE, L. G., VYSTAVKIN, A. N. and BERNASHEVSKIY, G. A.

"Radiation of Relativistic Electron Flow at Millimeter Waves,

report presented (by Bernashevskiy) at the 9th Symposium on Millimeter Waves, 31
31 March - 2 April 1959, Brooklyn Polytech. Inst, New York.

Inst. for Radioelectricity and Electronics, USSR

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E140/E435

AUTHOR: Lomize, L.G.

TITLE: Calculation of a Cherenkov Radiator in the Microwave Band

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 5, pp 707-719 (USSR)

ABSTRACT: In this article the Cherenkov radiation of an extended beam in wave-guide systems with dielectric filling is considered. It is shown that waveguide Cherenkov radiators are substantially better than horn-type devices used experimentally (Ref 12 to 14), based on the extraction of energy in an unbounded dielectric in the direction perpendicular to the beam motion. As shown in the work of other authors (Ref 20,14), in the millimeter band waveguide delay structures have substantial advantages over resonant systems. The author first considers the Cherenkov radiation of a pre-bunched electron beam in an unbounded dielectric. A quantity R_r is defined as the radiation resistance and is a function of the radiator parameters and the velocity and transverse structure of the electron beam. The case where the beam

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uniformly fills the entire channel section is considered. If the bunching remains constant increase of beam energy above 1 to 2 MeV gives a very slow increase of R_r. With sufficient length of waveguide there is a clearly expressed resonant behaviour of R_r at synchronism between the current wave and the electromagnetic wave. The resonant frequencies for various wave modes differ. An expression is found for the envelope of the frequency characteristic $R_{r0} + R_{r\,res}(f)$, permitting qualitative evaluation of the radiator operation without solution of the dispersion equation. With increase of waveguide radius or decrease of length of radiating section, the individual resonance curves overlap and a continuous resonance zone occurs. The quantity R_{r0} is directly proportional to f. This is in agreement with the well-known fact that Cherenkov radiation power is proportional to frequency. In the presence of a channel in a dielectric the dependence of R_{r0} on ε and f should change substantially. The author recommends the following three forms of Cherenkov radiator.

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1. A selective radiator tuned to some one harmonic contained in the beam; ε should be taken between 5 and 10. Resonance should be designed for the E_{01}-wave. 2. Broadband radiator, tuned simultaneously to a number of beam harmonics. The fundamental resonance is taken for the E_{02}- or E_{03}-wave with the distance between two resonances as closely as possible equal to the beam bunching frequency or its harmonic. 3. Broadband radiator operating in the continuous-resonance zone. For the first two cases, tuning is most easily obtained employing a ferrite-dielectric mixture instead of a pure dielectric. Tuning is then obtained by variation of the magnetic tensor of the ferrite. The work was directed by Bernashevskiy and the assigned-current method of solving the waveguide problem employed in the paper was suggested by Vystavkin. There are 11 figures and 20 references, 10 of which are Soviet, 4 English and 6 English in Russian translation.

SUBMITTED: May 11, 1959

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9.1200

AUTHORS: Anisimova, Yu.V., Bernashevskiy, G.A., Vystavkin, A.N., and Lomize, L.G.

TITLE: Millimeter-Band Investigation of Waveguide Radiators Excited by Relativistic Electron Streams

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 6, pp 969-980 (USSR)

ABSTRACT: In previous theoretical and experimental studies in this field relativistic beams were used, accelerated and bunched in linear electron accelerators or accelerating resonators, fed by power resonators in the centimeter waveband. Magnetic undulators and resonators operating at higher oscillation modes have been used, including dielectric-filled. The radiation power obtained experimentally was as a rule 10 to 100 mW in the longwave portion of the millimeter band but reduced to units or tenths of microwatts at waves of the order of 2 to 3 mm, apparently as a result of insufficiently good bunching of the beam. Cherenkov-radiation experiments were carried out only for low-voltage beams (of the order of 10 kV). The radiation power obtained was a fraction of

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a microwatt at a frequency of 24 Gcs, coinciding with the ' .nching frequency of the beam. In general Cherenkov radiation in the millimeter region has not been studied experimentally and the theoretical calculations have been carried out for single electrons moving in an unbounded space or an infinitely long waveguide and for an extended electron beam in an unbounded dielectric medium. Such different approaches to the problem make comparison difficult. In the present work different waveguide radiators are studied from a common point of view and an attempt is made to narrow the existing gap between theoretical and experimental results. The present article considers the following three types of waveguide radiators: smooth waveguide of finite length with rectilinear electron beam, dielectric field waveguide (Cherenkov radiator), magnetic undulator. The approach is to consider the radiation resistance R as the quantity fully characterising a given radiator. In a smooth waveguide

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the radiation resistance reaches appreciable levels and therefore the radiation in such a waveguide may be observed experimentally without difficulty. For a Cherenkov radiator with a long dielectric delay structure it is difficult to realise synchronism simultaneously at several beam harmonics. It is therefore useful to employ ferrite delay systems permitting regulation of the phase velocities of various waves by magnetic bias of a constant longitudinal magnetic field. The maximum radiation resistance in the Cherenkov radiator at a given frequency occurs for a channel diameter coinciding with the beam diameter and a waveguide diameter calculated from the condition of synchronism for the E_{01}-wave. For the undulator maximum power is radiated at transverse dimensions of the rectangular waveguide equal to the beam width and the sum of the electron oscillation amplitude and the beam thickness respectively. The optimum design of a smooth waveguide radiator corresponds to a waveguide diameter equal to the electron beam diameter (not below

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critical). The length of synchronised radiators is taken equal to L = 10 cm. At this length the efficiency of synchronised radiators is substantially higher than the efficiency of non-synchronised radiators. The efficiency of the Cherenkov radiator for the present example is substantially greater than the undulator efficiency. An experimental study of these radiators was carried out using a linear electron accelerator operating in the 10 cm band with output energy 0.5 to 5 MeV and pulse current 30 to 50 mA, the tested radiator and a set of measuring instruments. The harmonic composition of the electron beam was not studied experimentally. Therefore the values of R obtained are only relative. They are somewhat low for the following reasons: the shape of the bunch at the accelerator output may differ substantially from rectangular; in calculating R reflection, absorption and conversion losses in various elements of the channel were neglected; the radiation power of the investigated

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signal sometimes reached tens of milliwatts compared with a calibration signal of 45 μW. It was assumed that the detector characteristic is quadratic. On the average in the range from 10 to 2 mm a decrease of radiation power with decrease of wavelength was observed generally constituting approximately 1 dB per harmonic. There are 11 figures, 1 table and 16 references, of which 15 are Soviet and 1 is English.

SUBMITTED: August 20, 1959

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AUTHOR: Lomize, L.G.

TITLE: On Transit and Retardation Radiation in Waveguide Systems

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.9, pp.1546-1549

TEXT: It is shown that if a finite length of modulated electron beam is assumed, a unified treatment of Cherenkov, transit and retardation radiations may be applied. A plane waveguide system is considered in the assigned-current approximation, after which a rectangular waveguide is examined. With $L \approx b$ the transit radiation power should be of the same order of magnitude as the retardation power, somewhat exceeding the latter. This was checked experimentally in a rectangular waveguide 3 x 20 mm, with 3 MeV electron beam. One of the wide walls of the waveguide was made of a foil transparent to the electron stream. The waveguide was matched at one end and connected at the other to a measurement circuit reacting to the H_{10} wave (Ref.11). The experimental results confirmed the calculations. Calculations showed that, at relativistic velocities of the beam,

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radiation in the direction of the beam is substantially more intense than in the perpendicular direction. This is in accordance with Ref.1. Acknowledgment is made to G.A.Bernashevskiy for directing the work. There are 2 figures and 15 Soviet references.

SUBMITTED: September 26, 1959

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CHERNETSKIY, A.V., kand. fiz.-mat. nauk, red.; LOMIZE, L.G., inzh., red.; ANDREYENKO, Z.D., red.; VLASOVA, N.A., tekhn. red.

[Some problems of physical experimental technique in studying gas discharges] Nekotorye voprosy tekhniki fizicheskogo eksperimenta pri issledovanii gazovogo razriada; nauchno-tekhnicheskii sbornik. Moskva, Gosatomizdat. No.3. 1961. 120 p. (MIRA 15:5)

(Electric discharges through gases)

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9.1310 (also 1130, 1155)

S/057/61/031/003/006/019
B125/B202

AUTHOR: Lomize, L. G.

TITLE: Comparative characteristics of Cherenkov, and transition, radiation, and bremsstrahlung in the range of short radiowaves

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 3, 1961, 301-310

TEXT: The author derives the most important equations for the radiation resistance of a Cherenkov radiator - by taking account of the velocity spread - as well as for transition radiation and bremsstrahlung. He then intercompares the efficiencies of these radiators. Furthermore, the author reports on the results of the experimental study of a grouped electron beam with 3 - 5 Mev. These results in principle confirm the conclusions drawn from the theoretical calculations made by the author. Instruments of the type of a magnetic undulator were developed for the first time by Mots, Ton, Whitehearst. The first chapter of this paper deals with Cherenkov radiation by taking account of the velocity spread of electrons in the cluster. In this connection a cylindrical electron

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beam with a radius r_0 passes a channel with the same radius in a dielectric filling a metallic semiconductor with the radius R. The beam is assumed to consist of a periodical sequence of electron clusters of arbitrary duration and shape. The electron velocities are assumed to be distributed in each cluster according to a π-type law: $dN/dv = 0$ with $v > v_1$ and $v < v_2$; $dN/dv = N/\Delta v$ with $v_2 \leqslant v \leqslant v_1$. v is the number of the electrons in the cluster and $\Delta v = v_1 - v_2$. For the radiation resistance R_{rn} on the wave E_{on}

$$R_{rn} = \frac{\beta_0^3 \left[F\left(\frac{2\pi r_0 \theta}{\beta_0}\right)\right]^2}{2\pi^2 \varkappa^2 r_0^3 c Q} \mathrm{Si}^2 \frac{\pi \varkappa L}{\beta_0}, \qquad (2)$$

with

$$Q = \left(r_0 + \frac{h}{\varepsilon}\right)\left[F\left(\frac{2\pi r_0 \theta}{\beta_0}\right)\right]^2 + \frac{\beta_0^3(\varepsilon - 1)}{\pi \theta \tau^2} F\left(\frac{2\pi r_0 \theta}{\beta_0}\right) - \frac{r_0(\varepsilon - 1) - \varepsilon h \theta^2}{\tau^2}. \qquad (3)$$

hold with the following abbreviations:

$$F(x) = \frac{I_1(x)}{I_0(x)}; \quad \tau = \sqrt{\varepsilon \beta_0^2 - 1}; \quad \theta = \sqrt{1 - \beta_0^2}; \quad \varkappa = \frac{\Delta \gamma}{\gamma_0} \approx \frac{\Delta v}{v_0}; \quad h = R - r_0.$$

In this case all geometrical quantities are referred to the wavelength and marked by a bar. The velocity spread is taken into account by the factor $\zeta = \frac{R_{rn}(\varkappa)}{R_{rn}(0)} = \left[\frac{\beta_o}{\pi\varkappa L}\,\mathrm{Si}\frac{\pi\varkappa\bar{L}}{\beta_o}\right]^2$. Fig. 2 illustrates the dependence of R_r on the relative length L of the radiator with different relative spreads $\varkappa$ of the velocities. With increasing $\bar{L}$ R_{rn} shows an oscillating asymptotic behavior when approaching its limit

$$\lim_{L\to\infty} R_{rn} \frac{\beta_o^3\left[F\left(\frac{2\pi\bar{r}_o\theta}{\beta_o}\right)\right]^2}{8\varkappa^2\bar{r}_o^3 cQ}.$$

A length of the radiator exceeding $\bar{L} = \beta_o/\varkappa$ is practically of no interest. The second chapter deals with transition radiation and bremsstrahlung in waveguides. For R_r of the transition radiation in a rectangular waveguide

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$$R_r = \frac{2\beta^2}{c\bar b}\sin^2\frac{\pi\bar b}{\beta}\sum_{m=1}^{k_1}\frac{1}{\bar\gamma_{m0}} +$$

$$+\frac{16}{\beta^2\bar b c}\sum_{m=1}^{k_2}\sum_{n=1}^{k_3}\frac{\frac{\bar\gamma_{mn}\bar b^2}{4\bar a^2\pi^2}+\frac{\bar a^2 n^2}{\beta^2\bar\gamma_{mn}m^2}}{\left(\frac{\bar b^2}{\beta^2}-\frac{n^2}{4}\right)^2}\sin^2\pi\left(\frac{\bar b}{\beta}-\frac{n}{2}\right), \qquad (4)$$

holds for an infinitely thin beam, with summation being made only over the odd indices of m. $\bar a$ and $\bar b$ are the internal dimensions of the wave-guide. $\bar\gamma_{mn} = a\gamma_{mn} = \pi\bar a^{-1}\sqrt{4-\frac{m^2}{\bar a^2}-\frac{n^2}{\bar b^2}}$ are the reduced wave numbers; k_1, k_2, and k_3 are the indices of the upper boundary of the propagating waves. The first sum corresponds to the waves H_{m0} which appear to be the most convenient for practical application. The first and the second term in the numerator of the second sum correspond to the waves E_{mn} and H_{mn}, respectively. With short waves the transverse dimensions of the wave are

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of great importance. Then $R_r = \frac{64\beta}{\pi^2 c} \sum_{m=1}^{k_1} \frac{1}{m^2 \gamma_{mo}^3} \sin^2 \frac{\gamma_{mo}}{2}$ (5). When the electrons in the medium filling the waveguide are slowed down the physical factors influencing the electron trajectories and the secondary electrons produced in this medium must be taken into account. However, this problem can be solved phenomenologically in first approximation if all electrons are assumed to be uniformly slowed down until a complete stop on a certain path L. Equation

$$R_r = \frac{2\pi^2 L^2}{cb\left(1 + \frac{4\pi^2 L^2}{\beta^2}\right)} \sum_{m=1}^{k_1} \frac{1}{\gamma_{m0}} \quad \text{при } L \leqslant b; \qquad (6a)$$

and

$$R_r = \frac{2\pi^2 L^2}{cb\left(1 + \frac{4\pi^2 L^2}{\beta^2}\right)} \times$$

$$\times \left\{4\left(1 - \frac{b}{L}\right)\sin^2\left[\frac{2\pi L}{\beta}\ln\left(1 - \frac{b}{L}\right)\right] + \frac{b^2}{L^2}\right\} \cdot \sum_{m=1}^{k_1} \frac{1}{\gamma_{m0}} \quad \text{при } L > b, \qquad (6б)$$

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then hold with $\bar{L} = L/\lambda$. With $L \to \infty$ Eq. (6b) approaches the first sum in formula (4). In this case a transition radiation is concerned. With square beams (lateral length a)

$$R_r = \frac{32L^2}{cb\left(1+\frac{4\pi^2L^2}{\beta^2}\right)} \sum_{m=1}^{k_1} \frac{1}{m^2\gamma_{m0}^3} \sin^2\frac{\gamma_{m0}}{2} \quad \text{при } L \leqslant b;$$

$$R_r = \frac{32L^2}{cb\left(1+\frac{4\pi^2L^2}{\beta^2}\right)} \left\{4\left(1-\frac{b}{L}\right)\sin^2\left[\frac{2\pi L}{\beta}\ln\left(1-\frac{b}{L}\right)\right]+\frac{b^2}{L^2}\right\} \times$$

$$\times \sum_{m=1}^{k_1} \frac{1}{m^2\gamma_{m0}^3} \sin^2\frac{\gamma_{m0}}{2} \quad \text{при } L \geqslant b;$$

$$R_r = \frac{32L}{c\left(1+\frac{4\pi^2L^2}{\beta^2}\right)} \sum_{m=1}^{k_1} \frac{1}{m^2\gamma_{m0}^3} \sin^2\frac{\gamma_{m0}}{2} \quad \text{при } L = b.$$

holds. In phenomenological approximation transition radiation is about three times as efficient as bremsstrahlung. The optimum Cherenkov radia-

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tor is a cylindrical waveguide filled with a dielectric and provided with a channel for the passage of the beam. For transition radiation in transverse direction a rectangular waveguide is used best. The results of the study of Cherenkov and transition radiation are illustrated in Figs. 5 and 6. The experimental data confirm the results of the theoretical calculations described here. There are 6 figures and 26 references: 24 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: G. A. Bernashevsky, A. N. Vystavkin, L. G. Lomize, Radiation of Relativistic Electron Flow at Millimeter Waves, Symposium on Millimeter Waves, Polytechn. Inst. of Brooklyn, New York, 1959.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR Moskva (Institute of Radio Engineering and Electronics of the AS USSR Moscow)

SUBMITTED: April 13, 1960

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AUTHORS: Lomize, L. G., Kurbanov, O. M.

TITLE: Effect of the spread of the electron velocity upon the radiation of uniformly moving electron clusters in wave-guide systems

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 657-664

TEXT: Relations are derived for the quantitative determination of the influence of the spread of electron velocity in waveguide radiation. If the clusters move along the z-axis, the current transported by them is, at a point z, given by

$$i=\int_{v_1}^{v_2} vq'\left(t-\frac{z}{v}\right)q''(v)\,dv. \qquad (I),$$

where v denotes the velocity; q', q", are the factors of the separation ansatz for $q(t, v) = q'(t)q''(v)$ (1); $q(t, v)dtdv$ is the charge transported in the velocity interval $v + dv$ during the time dt. If (I) is expanded in a Fourier series, the following is obtained for the harmonics of the

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current:

$$i_n = \int_{v_1}^{v_2} v q_n' e^{j\omega_n\left(t - \frac{z}{v}\right)} q''(v)\, dv = \int_{\gamma_{e1}}^{\gamma_{e2}} \frac{\omega_n^2}{\gamma_e^3} q_n' e^{j(\gamma_e z - \omega_n t)} q''\left(\frac{\omega_n}{\gamma_e}\right) d\gamma_e, \quad (2)$$

where $\gamma_e = \frac{\omega_n}{v}$ and q_n' is the Fourier coefficient. Assuming that

$$q''(v) = \frac{v_0}{v}\frac{1}{\Delta v} = \frac{1}{v \ln\left(\frac{v_2}{v_1}\right)} \quad \text{for} \quad v_1 \leqslant v \leqslant v_2, \quad (3)$$

$$q''(v) = 0 \quad \text{for} \quad v < v_1 \text{ и } v > v_2,$$

where $\Delta v = v_2 - v_1$ and $\Delta v \lessdot v$, the following is obtained:

$$i_n = \frac{2I_{0n}}{\Delta\gamma_e z} \sin\frac{\Delta\gamma_e z}{2}\, e^{j(\gamma_{e0} z - \omega_n t)}, \quad (4),$$

where $\gamma_{e1} = \frac{\omega_n}{v_1}$, $\gamma_{e2} = \frac{\omega_n}{v_2}$, $\Delta\gamma_e = \gamma_{e1} - \gamma_{e2}$, $\gamma_{e0} = \frac{\gamma_{e1} + \gamma_{e2}}{2}$ Ӿ, $I_{0n} = v_0$, (II)

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is valid and q_n' denotes the amplitude of the harmonic at the input of the emitter. If the effect of radiation upon the structure of the electron beam is neglected, the radiated power is

$$P = \sum_{mn} (P_{mn} + P_{-mn}) \qquad (5),$$

where

$$P_{\pm mn} = \frac{1}{16p_{mn}} \left| \int_V \mathbf{j}\mathbf{E}_{\mp mn} dV \right|^2, \qquad (6)$$

($\vec{j}$ is the complex amplitude of current density, $\vec{E}_{\mp mn}$ the complex amplitude of the electric field of the mn-th wave, and p_{mn} the power of the mn-th wave.)

$$P = R_r I_0^2 \qquad (7)$$

follows from (4), (5), (6); R_r is the radiation resistance. When restricting oneself to a waveguide (Fig. 1a),

$$p_{mn}(H_{mn}) = \frac{ck\mu\gamma_{mn}ab}{32\pi\varkappa_{mn}^2}; \qquad p_{mn}(E_{mn}) = \frac{ck\varepsilon\gamma_{mn}ab}{32\pi\varkappa_{mn}^2}, \qquad (8)$$

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holds for H_{mn} and E_{mn}, where $k = \omega/c$, $s_n = \pi n/b$, $s_m = \pi m/a$, $\gamma_{mn} = \sqrt{k^2\varepsilon\mu - s_{mn}^2}$, $s_{mn}^2 = s_m^2 + s_n^2$. When introducing the dimensionless quantities

$$\bar{a} = \frac{a}{\lambda};\ \bar{b} = \frac{b}{\lambda};\ \bar{\gamma}_{mn} = 2\pi\frac{\lambda}{\lambda_n};\ \bar{s}_m = \frac{\pi m}{\bar{a}};\ \bar{s}_n = \frac{\pi n}{\bar{b}};\ \bar{s}_{mn}^2 = \bar{s}_m^2 + \bar{s}_n^2, \qquad \text{(III)},$$

the equation

$$R_r = \frac{\beta_0^2}{4\pi c\bar{a}\bar{b}\varkappa^2}\sum_{\frac{m+1}{2}=1}^{k_1}\sum_{n=0}^{k_2}\frac{1}{\bar{s}_{mn}^2}\left[\frac{2\pi\mu\bar{s}_m^2}{\bar{\gamma}_{mn}} + \frac{\bar{\gamma}_{mn}\bar{s}_n^2}{2\pi\varepsilon}\right]\times$$

$$\times\left\{\left[\mathrm{si}\left(\frac{2\pi}{\beta_1}+\bar{s}_n\right)\bar{b} - \mathrm{si}\left(\frac{2\pi}{\beta_2}+\bar{s}_n\right)\bar{b} + \mathrm{si}\left(\frac{2\pi}{\beta_1}-\bar{s}_n\right)\bar{b} - \mathrm{si}\left(\frac{2\pi}{\beta_2}-\bar{s}_n\right)\bar{b}\right]^2 +\right.$$

$$+\left[\ln\left|\frac{\left(\frac{2\pi}{\beta_1}\right)^2 - \bar{s}_n^2}{\left(\frac{2\pi}{\beta_2}\right)^2 - \bar{s}_n^2}\right| + \mathrm{ci}\left(\frac{2\pi}{\beta_2}+\bar{s}_n\right)\bar{b} - \mathrm{ci}\left(\frac{2\pi}{\beta_1}+\bar{s}_n\right)\bar{b} +\right.$$

$$\left.\left. + \mathrm{ci}\left|\frac{2\pi}{\beta_2}-\bar{s}_n\right|\bar{b} - \mathrm{ci}\left|\frac{2\pi}{\beta_1}-\bar{s}_n\right|\bar{b}\right]^2\right\}, \qquad (9)$$

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is obtained from (4), (6), (8), which hold also for $\epsilon\mu\beta^2 > 1$ (Cherenkov effect): here,

$$\beta_{1,2} = \frac{v_{1,2}}{c}, \quad \beta_0 = \frac{(\beta_1 + \beta_2)}{2}, \quad x = \frac{(\beta_2 - \beta_1)}{\beta_0}; \qquad \text{(IV)};$$

ci and si are the integral sine and cosine, respectively. The definition

$$\mathcal{L}_{mn} = \frac{R_{rmn}}{R_{r0mn}} \qquad \text{(V)}$$

(R_{r0mn} at $\chi = 0$) shows that this quantity describes directly the influence of velocity spread upon R_r for different waves. The dependence of $\mathcal{L}_{m0}$ on the relative spread of the electron velocity with respect to the energy $\Delta W/W_0$ at $W_0 = 0.1$ Mev is shown in Fig. 2 for the wave H_{m0} (s is the number of half electron wavelengths along b). Considering a cylindrical waveguide (Fig. 1b), the analogous computation leads to Fig. 3 ($\bar{L} = L/\lambda$) for $\Delta W/W_0 = 0.24$, $W_0 = 0.1$ Mev, $a/\lambda = 0.5$. The limit t of R_r for $\bar{L} \to \infty$ is given by

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$$\lim_{L\to\infty} R_r = \frac{\beta^2}{16\pi^3 c\varepsilon a^2\varkappa^2} \sum_{n=1}^{k} \frac{t_n^2}{\gamma_n J_1^2(\nu_n)} \ln^2 \left| \frac{\frac{2\pi}{\beta_1} - \gamma_n}{\frac{2\pi}{\beta_2} - \gamma_n} \right| . \quad (14).$$

V. L. Ginzburg and G. A. Askar'yan are mentioned. There are 3 figures and 8 Soviet-bloc references.

ASSOCIATION: Institut radiotekhniki i elektroniki Moskva (Institute of Radio Engineering and Electronics, Moscow)

SUBMITTED: April 13, 1960

Legend to Fig. 1:
1) Electron beam.

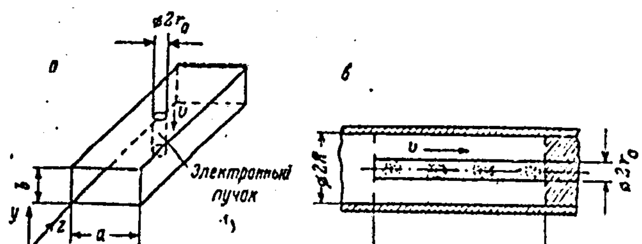

FIG.1

Card 6/7

42450

S/725/61/000/003/002/006

AUTHOR: Lomiz [illegible] L.G.

TITLE: The emission of rapid clustered electron beams in the submillimeter radiowave band

SOURCE: Nekotoryye voprosy tekhniki fizicheskogo eksperimenta pri issledovanii gazovogo razryada; nauchno-tekhnicheskiy sbornik, no. 3. A.V. Chernetskiy & L.G. Lomiz eds. Moscow. Gosatomizdat, 1961. 31-52.

TEXT: This state-of-the-art review of the emission of powerful coherent submillimeter radiation [illegible] theory and experimental findings by other authors. Use of the Vavilov [illegible] effect and of a Doppler frequency multiplication produced [illegible] tron beam was first proposed by V. L. Ginzburg [illegible] v. 11, no. 2, 1947, 165). The use of transient and [illegible] purpose was first outlined by Askar'yan, [illegible] and v. 30, no. 3, 1956, 584) and by Krylov, K. I. [illegible] 164, and Voprosy radioelektroniki (Radiotekh[illegible] characterized the Doppler effect as less seriya I, [illegible] effective. [illegible] primarily on the use of the Vavilov-

Card 1/3

S/725/61/000/005/00...

The emission of rapid clustered ....

Cherenkov effect and of transient radiation, together with remarks on ... len in phenomenological approximation. Four different configurations of dielec... waveguides, and channels are discussed in an analysis which concludes that an infinitely long cylindrical waveguide, filled with a dielectric having an axial channe... over a finite length of which a monochromatic beam consisting of a periodic sequen... of clusters is maintained, is the most effective (see, e.g., Bernashevskiy, G.A., Vystavkin, A.N., Lomize, L.G., in Symposium on Millimeter Waves, Polytechnic Inst. of Brooklyn, N.Y., April 1959; also Lomize, L.G., Radiotekhnika i elektronika v.5, no.5, 1960, 707, and v.5, no.9, 1960, 1546, and ZhTF, v.31, no.3, 1961, 301). The calculation shows that if the radiation emitted at different portions of the wave-guide is in phase, the resulting power is proportional to the square of the length of the waveguide. However, other factors, such as the initial velocity scatter of the electrons in each cluster and the wave-number scatter of the waveguide system due to the lengthwise nonuniformities of the radiator, limit the maximum practicable length of the device to 20 - 30 times the wavelength. If L increases further, the width of the resonance curves diminishes and the scatter of the electron-beam parameters of the decelerating system begins to have an adverse effect on the power of the radiator. The significant increase in radiator power with decreasing beam diameter lends much interest to recent improvements in the formation of extremely slender beams (Volkov, Ye.G., Krylov, K.I., Leningr. elektrotekhn. in-t, Izv., no. 3...

Card 2/3

The emission of [illegible] ... S/725/[illegible]/003/002/005

1958, 185; Krylov, [illegible], Bonch-Osmolov[illegible]y, A.G., ibid., no.36, 19[illegible]8, 78). There are 7 figures and 49 references ([illegible] Soviet, 14 English-language, and 1 French).

ASSOCIATION: None given.

Card 3/3

L 31127-65 EWT(d)/EWT(1)/EEC(k)-2/EEC-4/EED-2/EWA(h) Po-4/Pq-4/Pg-4/Pae/Pt-4/Pl-4

S/0286/65/000/003/0035/0035

ACCESSION NR: AP5007162

49
B

AUTHOR: Lyudmirskiy, V. I.; Lomize, L. G.; Kallagov, V. N.

TITLE: A method for measuring time-variable phase shifts in the shf range. Class 21, No. 167909

SOURCE: Byulleten' izobretenly i tovarnykh znakov, no. 3, 1965, 35

TOPIC TAGS: phase shift, phase meter, electronic measuring device

25

ABSTRACT: This Author's Certificate introduces a method for measuring time-variable phase shifts in the shf range. The method is based on homodyne frequency conversion using shf oscillator modulation, a signal delay line in one of the channels and a mixer. In order to measure rapid phase shifts in the shf range, single-tone frequency modulation of the shf oscillator is used. Two harmonics of the modulation frequency, separately amplified and converted, are used at the output of the shf mixer. When these harmonics are combined, they give an intermediate frequency signal which contains the phase shift being measured.

ASSOCIATION: none

Card 1/2

L 31127-65

ACCESSION NR: AP5007162

SUBMITTED: 26Jul63 ENCL: 00 SUB CODE: EC

NO REF SOV: 000 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000930510(

L 10204-66 EWT(1)/EEC(k)-2/FCS(k)/EWA(h) WR

ACC NR: AP5028465 SOURCE CODE: UR/0286/65/000/020/0032/0032

AUTHORS: Lyudmirskiy, V. I.; Lomize, L. G.; Kallagov, V. N.

52
B

ORG: none

TITLE: Superhigh frequency range interferometer. Class 21, No. 175542 [announced by Radio Engineering Institute AN SSSR (Radio-tekhnicheskiy institut AN SSSR)]

25

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 32

TOPIC TAGS: interferometer, superhigh frequency

ABSTRACT: This Author Certificate presents a superhigh frequency (SHF) range interferometer containing two channels — a measuring and a reference, a mixer, and a video amplifier. To increase the noise protection of the device, the SHF oscillator is provided with a monotone frequency modulator (see Fig. 1). A waveguide delay line is used in the measuring channel. A band-pass amplifier selecting one of the harmonics of the modulation frequency is connected at the output of

Card 1/2 UDC: 533.9.082.74:535.411

2

L 10204-66

ACC NR: AP5028465

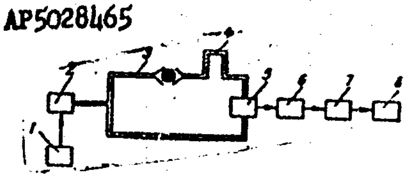

Fig. 1. 1 - Monotone frequency modulator; 2 - oscillator; 3 - measuring channel; 4 - waveguide delay line; 5 - mixer; 6 - intermediate frequency amplifier; 7 - detector; 8 - oscillograph.

the SHF mixer. Orig. art. has: 1 diagram.

SUB CODE: 09/ SUBM DATE: 26Jul63/

Card 2/2

L 7791-66 EWT(1)/EEC(k)-2/EWA(h)

ACCESSION NR: AP5027623 UR/0109/65/010/011/2010/2020
621.396.622.029.64.001.24

AUTHOR: Andreyev, V. K.; Lomiza, L. G.; Lyudmirskiy, V. I.; Filipchikov, L. L.

TITLE: Calculation of frequency conversion in high-speed serrodyne shf phasemeters with delay lines

SOURCE: Radiotekhnika i elektronika, v. 10, no. 11, 1965, 2010-2020

TOPIC TAGS: shf phase meter, frequency conversion, circuit delay line

ABSTRACT: The theory is presented and the formulas are developed for amplitudes and phases in a serrodyne shf phasemeter; the conditions of maximum phase deviation at the mixer input are analyzed; the role of the nonlinear-forward and finite-return motions in serrated modulation is clarified. These conclusions and practical recommendations are offered: 1) The maximum modulation frequency can be determined from $T \geqslant 5\tau$, where T is the modulation period and τ is the delay time of the long line involved; thus, the maximum speed (or maximum permissible Doppler frequency) is about $0.1/\tau$; the IF corresponds to the 4th or 5th harmonic of the modulation frequency. 2) With the return motion of the modulating voltage, or when the delay time is commensurate with the modulation

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2

period, the maximum phase deviation is $2\pi n(1 + \beta)$ for operation on the first 2—3 harmonics and is $2\pi n(1 - \beta)$ for operation on higher harmonics, where β is the ratio of the return time to the phase-modulation period. 3) Strict linearity of the modulating voltage and the frequency characteristic of the shf oscillator is not needed; a 20—30% nonlinearity is tolerable. "In conclusion, the authors wish to thank N. I. Malykh and Ye. S. Yampol'skiy for a useful discussion." Orig. art. has: 7 figures and 42 formulas. [03]

ASSOCIATION: none

SUBMITTED: 28Jul64 ENCL: 00 SUB COD

NO REF SOV: 003 OTHER: 005 ATD 147

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R00093051OC

LOMIZE, L. N.

"Variation of the Structural-Technical Properties of Salt-Contaminated Earth During the Filtration of Water Across It."
Izv. Tbilis. n-i in-ta sooruzh. i gidroenergetiki. Vol 5, pp 39-59, 1953

The author presents the results of investigations carried out in 1946-1948. They were performed upon five different types of ground found in eastern Transcaucasia. The investigations showed that the direction and intensity of the physical variations observed depended upon a large number of factors, including the composition of the mineral colloids and salts in the ground, the nature of the absorbed cations, etc. The author suggests further studies in salt dispersion. (RZhGeol, No2, 1955)

SO: Sum, No 606, 5 Aug 55

LOMIZE, L.N., kandidat tekhnicheskikh nauk.

Evaluating the suitability of saline soil as building material for hydro-technical earth structures. Gidr.i mel. 5 no.5:52-60 My '53. (MLRA 6:6)
(Dams)

Lomize, M.G.

5-6-19/42

AUTHORS: Khain, V.Ye., Afanas'yev, S.L., Gofman, Ye.A., Lomize, M.G., and Rikhter, V.G., Burlin, Yu.K.

TITLE: New Data on the Geology of the North-Western Caucasus (Novyye dannyye po geologii severo-zapadnogo Kavkaza) Between the Tuapse and Lazarev Crossings (mezhdu Tuapsinskim i Lazarevskim peresecheniyami)

PERIODICAL: Byulleten' Moskovskogo Obshchestva Ispytateley Prirody, Otdel Geologicheskiy, 1957, # 6, pp 132-133 (USSR)

ABSTRACT: A Caucasian expedition of the MGU, composed of the authors of this paper, carried out during 1955 to 1956 a detailed mapping in the upper parts of the rivers Pshekha, Pshish and Ashe. The expedition studied the following three structural zones of this territory: 1. The monoclinorium of the northern slope; 2. the central anticlinorium; and 3. the flysch zone of the southern slope.

As a result of these explorations, the stratigraphy of the Lower- and Middle-Jurassic deposits was clarified in details and differences in the structure of their columnar sections were discovered. These differences are connected with the structural zonation and deep breaks.

AVAILABLE: Library of Congress

Card 1/1

LOMIZE, M.G.

Manifestation of the Aalenian volcanism in the northwestern Caucasus (Sochy-Tuapse volcanic area). Izv.vys.ucheb.zav.; geol. i razv. 1 no.5:22-39 My '58. (MIRA 12:2)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova, kafedra geologii.
(Caucasus, Northern--Volcanoes)

AUTHOR: Lomize, M.G. SOV-5-58-3-19/39

TITLE: New Data on Jurassic Volcanism of the North-West Caucasus (Novyye dannyye po yurskomu vulkanizmu severo-zapadnogo Kavkaza)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, Nr 3, pp 147-148 (USSR)

ABSTRACT: This is a resume of a lecture given on Mar 20, 1958. Research work conducted during recent years by an expedition of the Moscow State University, headed by V.Ye. Khain, yielded new data on Jurassic volcanism of this region. It was established that the effusive and pyroclastic rocks, found between the Achishkho mountain (basin of the Mzymta river) and the Indyuk mountain are associated with the same volcanogen-sedimentary stratum. This stratum can be subdivided into 2 layers: the lower - the chatal'tapinskaya (approximately 900 m thick); and the upper - the Indyuk mountains (approximately 2,000 m thick). It can be stated,

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SOV-5-58-3-19/39

New Data on Jurassic Volcanism of the North-West Caucasus

that longitudinal tectonic zoning features predominate as to the time element and volcanic characteristics of the north-west Caucasus.

1. Geology--USSR 2. Volcanoes--Study and teaching

Card 2/2

20-119-1-39/52

AUTHORS: Kizeval'ter, D. S., Milanovskiy, Ye. Ye., Belov, A. A. Lomize, M. G.

TITLE: New Data on the Age of the Lower Carboniferous Stratum in the Central Part of North Kavkaz (North Caucasus) (Novyye dannyye o vozraste nizhnekamennougol'noy tolshchi v tsentral'noy chasti Severnogo Kavkaza)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 1, pp. 143-145 (USSR)

ABSTRACT: As the Paleozoic deposits of the Great Kavkaz (Caucasus) are palaeontologically extremely little characterized, every new discovery of fossil organisms attracts attention. Data of this kind are especially rare for the Central Kavkaz (Refs 1, 2, 7). Here the problem of the age of a thick mass of volcanogenic rocks, argillaceous schists and limestones which form the Peredovoy chain between the rivers Baksan and Teberda is especially interesting. For several reasons they are considered Lower Carboniferous. The 3 series separated by Robinson in the year 1947 (Ref 6) as well as the above-mentioned age determination are fairly weakly found.

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20-119-1-39/52

New Data on the Age of the Lower Carboniferous Stratum in the Central Part of North Kavkaz (North Caucasus)

ed. Still weaker is the subdivision of these deposits in stages by Robinson. Thus the data on the Lower Carboniferous age of this mass in the Central Kavkaz are virtually absent. Numerous doubts remained especially with regard to the age of the volcanogenic mass, the more that under the conditions of a very complicated structure the continuity of the cross section of the 3 series was not determined. Kizeval'ter (Ref 3) determined the continuity of the cross section of the middle and upper series in the year 1946-47. He suggested considerable rearrangements in Robinson's scheme. The age, however, still remained determined according to the stratigraphic position. In the year 1955 the deposits under review were studied by the Kavkaz-expedition of the Moscow State University and the Moscow Geological-Prospecting Institute. Kizeval'ter's data were confirmed and somewhat detailed, and some paleontological discoveries were made. Most interesting are finds of Rugosa-corals in the carbonate mass of the Carboniferous which occurs in the divide region of the Peredovoy chain (Baksan river basin), further of stromatopores and straight nautiloideae. Because

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20-119-1-39/52

New Data on the Age of the Lower Carboniferous Stratum in the Central Part of North Kavkaz (North Caucasus)

of the bad state of preservation only some corals have hitherto been determined from them, which , however, for the first time they prove the occurrence of the faunally characterized Lower Carboniferous in this region. The mass and the found corals ar briefly described and their occurrence in the upper Turnet - and lower Visé emphasized. There are 9 references, 9 of which are Soviet.

ASSOCIATION: Moskovskiy geologorazvedochnyy institut im. S. Ordzhonikidze (Moscow Geological-Prospecting Institute imeni S. Ordzhonikidze)

PRESENTED: October 17, 1957, by N. S. Shatskiy, Member, Academy of Sciences, USSR

SUBMITTED: October 10, 1957

Card 3/3

BLOKHINA, L.I.; KOPTEV-DVORNIKOV, V.S.; LOMIZE, M.G.; PETROVA, M.A.; TIKHOMIROVA, E.I.; FROLOVA, T.I.; YAKOVLEVA, Ye.B.

Classification and nomenclature of ancient volcanic clastic rocks. Sov. geol. 2 no.5:73-80 My '59. (MIRA 12:8)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Volcanic ash, tuff, etc.--Classification)

SOV/151-59-8-2/24

3(5)

AUTHORS: Khain, V. Ye., Lomize, M. G.

TITLE: On Recent Movements Along Old Faults in Western Caucasus and on Their Influence on the Hydrographic System

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geologiya i razvedka, 1959, Nr 8, pp 17-21(USSR)

ABSTRACT: It is generally known that recent tectonic movements played an important part in the formation of the recent structure of the Great Caucasus. On the base of a general anticline uplift of the entire fold system the development of individual structures and of the movements mentioned in the title is continued (P. P. Zabarinskiy, Ref 4, S. A. Gatuyev, Ref 2, V. A. Grossgeym, Ref 3, L. A. Vardanyants, Ref 1, V. N. Krestnikov, Ref 5). The authors report on their observations made of the traces of the mentioned movements in the upper course of the river Kurdzhips (catchment area of Belaya river). The Lagonakskoye platform now uplifted to 2500 m strikes by its smooth relief. The widespread river system has a smoothly declining longitudinal profile and the larger rivers have valleys with flat bottom. Apparently this is a well preserved (Upper Miocene

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SOV/151-59-8-2/24

On Recent Movements Along Old Faults in Western Caucasus and on Their Influence on the Hydrographic System

or Pliocene) structural denudation plain. The old relief shows traces of the action of late nival, and in the South and on the Nagoy-Chuk chain of glacial processes. A reappearance of the karst phenomena is also connected with the general uplift which in some places led to the destruction of the old hydrographic system. A recent erosion trench may be seen only in the West (gap-like valley of the Tsitse river). During the formation of the Lagonakskoye platform the movements at the already earlier existing Kurdzhipskiy fault (East part of the platform) went on. This becomes apparent in the old river system crossing the fault line. Due to additional movements at the mentioned fault its north-eastern wing in the area of the Zholob gorge was uplifted by more than 200 m compared to the south-western wing. The shifting amplitude decreases towards the North and it seems to disappear entirely (Fig 3). The recent Kurdzhips river uses the source system of the old Kurdzhips. At the place where the river reaches the mentioned fault it turns sharply towards the North forming a narrow V-shaped valley along

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SOV/151-59-8-2/24

On Recent Movements Along Old Faults in Western Caucasus and on Their Influence on the Hydrographic System

the fault line (Fig 2). East of the fault a dead part of the paleo-Kurdzhips valley separated by it is observed which was uplifted by 200 m (the Zholob gorge). It is situated at the divide of the recent Kurdzhips and Belaya rivers and is almost (except for a small brook fed by karst sources) without water. The recent Kurdzhips river enters the valley of the paleo-Kurdzhips from the left. The observations made by V. I. Orlov (handwritten observations) according to which the Zholob gorge and the upper course of the Kurdzhips river were part of the catchment area of the Bzykhi river (or Bzykha) could not be confirmed. It may be seen from geomorphological observations that the movements mentioned in the title are still going on. There are 3 figures and 6 Soviet references.

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SOV/151-59-8-2/24

On Recent Movements Along Old Faults in Western Caucasus and on Their Influence on the Hydrographic System

ASSOCIATION: Moskovskiy gosudarstvennyy universitet
(Moscow State University)

Card 4/4

GOFMAN, Ye.A.; LOMIZE, M.G.; RIKHTER, V.G.; KHAIN, V.Ye.

Characteristics of the geological developent of the northwestern Caucasus in the lower and middle Jurassic. Izv.vys.ucheb.zav.; geol.i razv. 3 no.4:43-57 Ap '60. (MIRA 13:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Caucasus, Northern--Geology)

KHAIN, V.Ye.; LOMIZE, M.G.

Lateral, simultaneous sedimentation, and faulting on the boundary of the central and western Caucasus and the distribution of Mesozoic and Cenozoic facies. Izv. AN SSSR. Ser. geol. 26 no. 4:26-43 Ap '61. (MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova. (Caucasus--Geology)

LOMIZE, M.G.

Facies variability in Callovian deposits of the Belaya and Pshekha River Basins (Northern Caucasus) in connection with the structural and facies zonality of the area. Biul. MOIP. Otd. geol. 36 no.1:89-98 Ja-F '61. (MIRA 14:5)
(Caucasus, Northern—Geology, Stratigraphic)

ALEKSEYEVA, L.I.; LOMIZE, M.G.

Find of the Pleistocene mammal fauna in the upper Belaya Valley (Northern Caucasus). Izv.vys.ucheb.zav.;geol.i razv. 3 no.2: 29-33 F '60. (MIRA 15:5)

1. Geologicheskiy institut AN SSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Belaya Valley (Northern Caucasus)--Mammals, Fossil)

LOMIZE, M.G.; SOMIN, M.L.

Early manifestations of the Jurassic volcanism in the northwestern Caucasus. Vest.Mosk.un.Ser.4: Geol. 17 no.6:44-54 N-D '62. (MIRA 16:1)

1. Kafedra dinamicheskoy geologii Moskovskogo gosudarstvennogo universiteta. (Caucasus, Northern—Rocks, Igneous)

LOMIZE, M.G.

Terrigenous flysch between Aalen sediments in the northwestern Caucasus. Izv. vys. ucheb. zav.; geol. i razv. 6 no.12:11-26 D '63 (MIRA 18:2)

1. Moskovskiy gosudarstvennyy universitet.

BEER, M.A.; BYZOVA, S.I.; LOMIZE, M.G.

Overthrust sheet of Fetrus Mountain (Eastern Carpathians). Geotektonika no.4:84-91 Jl-Ag '65. (MIRA 18:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, geologicheskiy fakul'tet.

LOMIZE, M.G.; KHAIN, V.Ye.

Old valleys and changes in the drainage network of the western Caucasus under the influence of recent tectonic movements. Vest.Mosk.un.Ser.5: Geog. 20 no.4:17-25 Jl-Ag '65. (MIRA 18:12)

1. Kafedra dinamicheskoy geologii geologicheskogo fakul'teta Moskovskogo gosudarstvennogo universiteta. Submitted November 27, 1964.